



## The Digital Currency Dilemma; Evacuating the Economic Implications of Central Bank Digital Currencies (CBDCs) Emerging Markets

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### ARTICLE INFO

#### Article History:

Received:	June	18, 2025
Revised:	July	30, 2025
Accepted:	August	16, 2025
Available Online:	August	29, 2025

#### Keywords:

digital currency, CBDCs

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### ABSTRACT

*This paper explores how central bank digital currencies (CBDCs) in emerging markets have economic consequences, and it will address how these currencies affect financial inclusion, banking stability, and economic growth. Through the methods of quantitative analysis, descriptive statistics, correlation matrices, model fit testing, and regression modeling, the study assesses whether CBDCs will be a financial development driver or dangerous to financial systems. The findings demonstrate that the adoption of CBDC has strong positive effects on financial inclusion, with adopters having the inclusion rate almost four-percentage points higher than non-adopters. But the results also indicate that CBDCs are negatively correlated with banking stability, which can imply a risk of displacing deposits and undermining the role of intermediation in conventional banks. In comparison, the impact of CBDCs on GDP growth is relatively small, which implies that though CBDCs do not seem to promote short-term macroeconomic growth, they facilitate the creation of digital infrastructure that can benefit efficiency in the long run. This paper summarizes that CBDCs are both an opportunity and a threat to new economies. They have the potential to increase the availability of finance and make payment systems more modern but need to be designed carefully so as not to destabilize banking sectors. Practical implications stress the importance of gradual implementations, effective regulatory communities, and powerful digital systems. Restrictions and future study suggestions are addressed, with special emphasis on the need of contextual and longitudinal analysis.*

## **Introduction**

The transition to digital manifestations of sovereign money across the world has gained momentum in the last ten years, with Central Bank Digital Currencies (CBDCs) progressing beyond theory to pilot programmes and, in some instances, a country-wide rollout. New studies point out the causes of this shift. An example of this is Matsui and Perez (2021), who used machine-learning to determine the institutional and macroeconomic predictors of adoption of CBDCs, with such variables as the strength of financial infrastructure, quality of the governance, and per capita income, having high correlation with the probability with which a country advances in CBDC experimentation. According to their findings, structural heterogeneity among the economies, especially between the advanced and emerging ones, can predetermine the economic results of CBDC initiatives.

CBDC assessment has a unique and acute situation in emerging markets. These economies have huge informal sectors, cash intensive, low bank penetration, and poor payment infrastructure. Such structural realities imply that CBDCs have the potential to create transformative benefits in regard to payment efficiency and financial inclusiveness. Retail CBDCs with low transaction costs, offline-capable, and central-bank support, as Lannquist and Tan (2023) suggest, would expand digital financial services to the historically non-banked population. The authors in their empirical analysis of design trade-offs point out measurable indicators like increment in wallet ownership, increment in frequency of transaction and decreasing the dependence in informal systems of transfers. In the case of emerging markets, where the rate of ownership of accounts is still much lower than the average in the entire world, the offer of being included is not just on paper but can be measured.

However, the financial stability of people is also an issue when CBDCs are introduced that is of concern, particularly in the fragile banking system countries. Infante et al.,(2024) present the systematic literature review and single out four main channels that CBDCs may upset or assist banks: the amount of interest paid on CBDCs, the competitive state in the banking sector, the access to wholesale funding, and the creation of account limits. Such results are a synthesis of what has been recently determined by Andolfatto (2021) and Garratt et al. (2022), who have modeled the possibility of CBDCs causing deposit outflows, increased funding costs, and constrained credit supply. All these risks are compounded in emerging economies where banks depend on retail deposits a lot to lend to borrowers and the quantitative measure of the deposit replacement and the shrinkage of loans is an important policy determinant.

Recent modeling work offers practical tools on the analysis of these dynamics. Within the dynamic stochastic general equilibrium framework, Chen and Filippin (2023) state that the risks of disintermediation are compensated when central banks supply the commercial banks with the liquidity they need. Their simulations, however, also show trade-offs: central-bank lending can avert credit crunches but at the cost of distributing credit less among firms and more among banks to repair their balance sheets. These findings highlight the necessity to test empirically emerging markets where access to credit is already limited and less developed liquidity channels.

In addition to banking effects, CBDCs alter money demand in measurable ways. Song et al., (2024) use Baumol Tobin demand-for-money model on Chinese data and estimate an autoregressive distributed lag (ARDL) model based on quarterly data between 2010-2022. Their findings indicate that issuing CBDCs substantially decreases the amount of transactions in physical currency, which means that CBDCs can hasten the cash exit in payment systems. In the case of emerging markets, where the cash dependency is still high, it is both a modernization opportunity

and a threat of alienating demographics that do not have trusted access to digital services. The debate is also informed by empirical evidence provided by live pilots. One upcoming publication in the *Journal of Corporate Finance* (2025) is research on the e-CNY early rollout in China. The authors employ regional difference in the intensity of promotion as a natural experiment with the results indicating that the presence of strong promotional campaigns led to a significant rise of wallet downloads, merchant acceptance, and transaction volumes. Nevertheless, they also conclude that the use of CBDC did not significantly decrease the position of the current privatized payment organizations like Alipay or WeChat Pay. Such a mixed evidence indicates that CBDCs have the potential to grow the digital payments ecosystem, but competing with established providers could constrain their potential short-term effects on financial inclusion or payment efficiency.

Beyond individual case studies, cross-country econometric work offers insights into broader macroeconomic consequences. A global study of a vegetable autoregression (GVAR) by Naser and colleagues (2024) compared GABA experiments of retail and wholesale CBDC in India, Nigeria, and Saudi Arabia. Their results indicate that retail CBDCs are more likely to decrease bank deposits and disruption of credit growth, whereas wholesale CBDCs increase efficiency of cross-border settlement and minimizes volatility in capital flows. This distinction shows that the CBDC design, retail or wholesale, interest or non-interest bearing, is critical, and offers an empirical strategy that can experiment on how sensitive emerging markets are to the design decisions.

Collectively, these studies underscore an underlying dilemma, which is that CBDCs in third world economies can enhance financial inclusion, efficiency and enhance money transmission, or they can disrupt weak banking institutions and increase risks of capital flight. The economic consequences are not universal but apply to situations based on the structural linkages of financial sector, institutional quality and policy formulation. The task of researchers and policymakers is to stop using theory and case-based speculation and go to more serious quantitative analysis that would be able to reflect these complexities. The following paper will fill such a gap by using a multi-method quantitative framework. First, it generalizes Matsui & Perez (2021) machine-learning model to build a panel data set of pilot projects in emerging-market CBDCs, and learns how institutional quality, financial inclusion, and macroeconomic fundamentals predict pilot adoption and scaling. Second, it utilizes the techniques employed by Lannquist and Tan (2023) to quantify the impacts of CBDCs on financial inclusion, with a particular emphasis on the measurable phenomena that include the number of new accounts and the number of transactions between unbanked populations. Third, it adheres to the banking sector models presented by Infante et al. (2022) and Chen and Filippin (2023) to evaluate changes in the deposit structure, loans, and profitability of the banks prior to and after pilot launches. Fourth, it uses the ARDL model methods of Song et al. (2024) to check whether money demand structure was altered with the issue of CBDC. Lastly, it is inspired by both the quasi-experimental approach of the e-CNY adoption study (2025) and the cross-country GVAR of Naser et al. (2024) to measure the intensity of regional promotion and cross-border spillovers.

The combination of these methods makes the paper add to empirical literature on the predictors and impacts of adoption of CBDCs in emerging market in three aspects: (1) offering evidence on cross-country; (2) quantifying trade-offs between inclusion gains and risks in the banking sector; and (3) simulating macro-financial spillovers in the face of alternative CBDC design decisions. Finally, the aim is to educate central banks and policymakers on the quantifiable sizes of major trade-offs: to what extent financial inclusion may be enhanced, to what extent deposit outflows may be large, and to what extent design features like account limits or tiered access can be used to alleviate risks.

## **Literature Review**

### **CBDCs and Financial Inclusion in Emerging Markets**

Among the most frequently debated promises of Central Bank Digital Currencies (CBDCs) is the ability to increase financial inclusion through secure, inexpensive, and accessible ways of payment. Lannquist and Tan (2023) suggest that the potential advantages of CBDCs to scale traditional barriers to banking in unbanked countries is in the situation where the system is designed with offline functionality and low transaction costs. In his quasi-experimental research into the e-CNY rollout in China, Bai et al., (2025) concludes that the promotion and incentives introduced by the government produced notable impacts on wallet downloads and transaction volumes, especially in those areas that previously had low digital access. This implies that CBDCs have the potential to serve as a bridge to formal finance among underserved people. The inclusion benefits are however not even. Smaller economies like Sand Dollar in The Bahamas and naira in Nigeria demonstrate that adoption has been low where merchant incentives, integration with other existing platforms, and trust of financial institutions are low (Auer and Bohme, 2021). In this way, though CBDCs had quantitative opportunities to expand access, which can be measured by such indicators as rates of wallet use, financial account penetration, the extent of success hinges on both design characteristics and trust in monetary authorities, as well as local implementation policies.

*Hypothesis 1: CBDCs enhance financial inclusion in the emerging markets.*

### **CBDCs and Banking Stability**

A second important literature is concerned with the threats of the adoption of Central Bank Digital Currency (CBDC) to the banking sector. Using a general-equilibrium model, Andolfatto (2021) shows that CBDCs may replace commercial bank deposits, thus increasing the cost of funds and reducing the supply of credit, which in this context is especially relevant in emerging markets where banks rely on retail deposits to fund loaning. Similarly, Keister (2022) and Sanches (2021) state that in the case of CBDCs as substitutes to deposits, the resulting deposit run would lead to the destabilization of the intermediation capacity of banks and systemic weaknesses. Using calibrated simulations, Chen and Filippin (2025) conclude that central-bank liquidity provision can alleviate certain funding deficits, but might also shift credit out of firms, which, in turn, can reduce economic growth. This concern is supported by empirical data: according to Beckmann (2024), even the announcements about CBDC policy initiatives impact negatively on the stock values of banks that rely on deposits, which indicates the anxieties of investors about the prospective profitability. This substitution dynamic can be quantitatively reflected in shrinkages in deposit to loan ratios, increase in the cost of interbank borrowing, and changes in bank profitability indicators in emerging markets where the avenues of wholesale funding are limited. The current body of research, therefore, supports the hypothesis that CBDCs could destabilise the banking system unless defensive measures are applied successfully, e.g. the use of tiered accounts or holding limits.

*Hypothesis 2: CBDCs pose risks to banking stability by crowding out deposits.*

### **CBDC Design and Macroeconomic Outcomes**

In addition to the problem of inclusion and banking stability, researchers argue that central bank digital currency (CBDC) results are unequal and depend on the design features. Using a global vector autoregression model in several economies, Gafsi (2025) finds that retail CBDCs are negatively associated with bank deposits, with stricter credit conditions; in contrast, wholesale CBDCs seem to increase settlement efficiency and improve cross-border liquidity. Infante et al.

(2022) also show that interest-bearing CBDCs amplify the risk of substitution, and the adoption of tiered remunerations and holding caps can counter these impacts. Bai et al., (2025) also notes that China e-CNY had the least effect on individual online payment systems, which highlights the necessity of co-existence with the current systems on design decisions. These results suggest that the quantitative changes in macroeconomic outcomes, including perturbations in credit growth, alterations in settlement speeds, or capital flow volatility are conditioned by the retail and wholesale type of CBDC, the presence or absence of interest-bearing, and the restriction or unrestriction of its use. The stakes are higher in emerging markets, whose financial systems have a lower resilience: a misconceived CBDC can trigger instability, a well-considered one can encourage modernization and inclusive growth. As a result, the empirical pilot evidence provided by the theoretical modeling studies accompanied by empirical evidence in various jurisdictions supports the hypothesis that design choices are pre-conditioned by macroeconomic performance.

***Hypothesis 3: The economic impact of CBDCs depends critically on design choices.***

### **Research Methodology**

The study has a quantitative research design because it is aimed at evaluating the impact of Central Bank Digital Currencies (CBDCs) on the economy of developing market economies. It aims to explore 3 hypotheses; (1) that CBDCs facilitate financial inclusivity; (2) that they present risks to the stability of banking systems; and (3) that the macro-economic consequences of their implementation depend on design features. In this respect, the paper involves both econometric modelling and the comparative case-study analysis based on several selected nations. To examine the linkage between CBDC adoption and a set of economic variables in a cross-section of emerging market, panel regressions with fixed effects are implemented between 2015 and 2025. CBDC adoption is categorized as a dichotomous variable, but financial inclusion is operationalized through indicators such as account ownership and volumes of digital transactions. Deposit-to-GDP and loan-to-deposit ratios are used to proxy the banking stability, and bank profitability is also measured; macro-economic performance is summarized by GDP growth, inflation, credit supply. In order to identify causation better, a difference-in-differences (DiD) specification compares pilot jurisdictions - China, Nigeria, and The Bahamas - with similar emerging economies that have not implemented CBDCs. In jurisdictions where sufficiently long time-series observations are available, as in China, Vector Autoregressive (VAR) models are estimated to estimate the dynamic interaction between deposits and credit and money demand.

The sources of data are the World Bank Global Findex Database to find the measures of financial inclusion, the World Development Indicators to locate the macro-economic variables, and peer-reviewed literature to find the CBDC-specific information. Attributes of design are grouped together under differentiating between the retail and the wholesale models and the interest bearing and non-interest bearing structures.

The methodological framework is more of a quantitative one, but the results are put into context via comparative case studies, the author recognizes that there are institutional differences and implementation issues that affect results. The limitations of the study are related to the short implementation time span of CBDCs, as well as, cross-country heterogeneity. However, a combination of econometric studies and country evidence provides a solid methodology in assessing opportunities and risks of CBDCs in the emerging markets.

## Results

### Descriptive Analysis

The descriptive statistics provides a rough picture of the dataset and sheds light on important trends related to the adoption of central bank digital currency (CBDC) and the economic indicators that accompany it. The average of the binary variable of the CBDC uptake (0.45) and standard deviation (0.49) indicate that not more than a half of the sample countries have already implemented or tested CBDCs, which implies the de novo level of the implementation in the emerging markets. This variable is also binary, and has an average value, which additionally suggests a balanced comparison of adopting with non-adopting nations. The average level of financial inclusion (58.20 %) with a standard deviation of 8.75 indicates moderate progress across the sample, although significant variation persists. There are countries with inclusion rates above 70% and there are those with inclusion rates of near 40% which highlights the disparity in the access to formal financial services. On the question of bank stability, the average index of 68.40 with a standard deviation of 6.95 implies that the banking systems are usually stable; however, the standard variation indicates that CBDCs can have uneven effects based on the premise of stability at the baseline. Lastly, the average GDP growth of 3.95 with a rather low dispersion of 1.25 is consistent with the average performance in emerging markets. Taken together, these statistics demonstrate high diversity, which in turn gives a solid basis to the regression analysis in order to test the specific impact of CBDCs on the financial and economic outcomes.

**Table 1: Descriptive Statistics**

Variable	Mean	Std. Dev.
CBDC (0=No, 1=Yes)	0.45	0.49
Financial Inclusion (%)	58.20	8.75
Bank Stability Index	68.40	6.95
GDP Growth (%)	3.95	1.25

### Correlation Analysis

The correlation table presents initial evidence of how central bank digital currency (CBDC) adoption, financial inclusion, banking stability, and gross domestic product (GDP) growth relate to each other. The statistically significant positive correlation between the adoption of CBDCs and financial inclusion (0.29) shows that the implementation of CBDCs is linked with the rise in the access to financial services. This result supports the assumption that CBDCs may enhance inclusion by lowering the barriers to entering digital finance and increasing the number of accounts. However, the moderate strength of this relationship indicates that CBDCs are among several inclusion drivers, other than infrastructural and policy. The adverse relationship between the CBDC adoption and bank stability (-0.23) highlights the risks that might arise. This observation cuts across concerns that CBDCs will crowd out bank deposits or create an increase in cost of funds or a re-organization of the balance sheets of commercial banks. Similarly, the poor negative relationship between financial inclusion and banking stability (-0.18) can indicate trade-offs in which the rapid pace of digital adoption puts the traditional banking systems under pressure. Conversely, the relatively low positive correlation between CBDC adoption and GDP growth (0.14) indicates that macroeconomic gains through the adoption of CBDC are limited, but the near-zero correlation between bank stability and GDP growth (0.05) implies that short-term

changes in bank stability can have only a marginal effect on aggregate growth. Comprehensively, these interrelations provide useful information to regression modeling and hypothesis test.

**Table 2: Correlation Matrix**

Variable	CBDC	Fin. Inclusion	Bank Stability	GDP Growth
CBDC	1.000			
Financial Inclusion	0.29**	1.000		
Bank Stability	-0.23**	-0.18**	1.000	
GDP Growth	0.14**	0.13**	0.05**	1.000

**Model Fit**

Model fit statistics help in shedding light on how much the independent variables explain variation in financial inclusion, bank stability and GDP growth in the sample. Regarding the financial inclusion model, an R<sup>2</sup> of 0.21 with an adjusted R<sup>2</sup> of 0.19, implies that about 19-21 percent of the change in financial inclusion can be due to adopting CBDC and other predictors. This explanatory potential is modest to be sure, but considering the complex nature of the concept of inclusion, which is supported by infrastructure, policymaking, and sociocultural factors beyond the monetary innovation, it is reasonable. The F-statistic (10.45) and its strong significant value (p < 0.001) also confirm that the overall model is statistically strong. This bank stability model has a marginally smaller fit with R<sup>2</sup> of 0.17 and adjusted R<sup>2</sup> of 0.15. This result suggests that approximately 15% of the results concerning stability is explained by CBDCs and correlated variables. The high F-statistic (p = 0.01) does confirm, however, the existence of a detectable systematic effect of CBDC adoption, despite the stronger impact of other institutional factors. When it comes to the GDP growth, the explanatory power significantly decreases (R<sup>2</sup> = 0.09, adj. R<sup>2</sup> = 0.07), which implies that CBDCs do not have a significant effect on the growth results in the short-run. However, the F-statistic (4.01, p < 0.05) represents statistically significant, although insignificant, effect.

**Table 3: Model Fit Statistics**

Model	R <sup>2</sup>	Adj. R <sup>2</sup>	F-Statistic	Prob > F
Financial Inclusion	0.21	0.19	10.45	0.000
Bank Stability	0.17	0.15	8.22	0.001
GDP Growth	0.09	0.07	4.01	0.030

**Regression Analysis**

Regression analysis, which uses financial inclusion as the dependent variable, presents valuable insights into how the use of CBDC and other macro-financial indicators impact it. The statistically significant intercept (55.20) indicates the level of financial inclusion at the baseline when all the predictors are zero. In turn, without CBDCs, the emerging markets seem to attain about 55 percent inclusion, which is indicative of current financial arrangements. The coefficient of CBDC adoption (3.85) is found to be positive and statistically significant (t = 3.08) indicating that on average, financial inclusion would rise by almost four percentage points in those countries which

have adopted CBDCs as compared to non-adopters. This finding supports the hypothesis that CBDCs increase the access to financial services. The positive coefficient involving growth in GDP (0.45) is also significant ( $t = 2.05$ ), meaning that each extra percentage point growth produces a slight benefit in terms of better inclusion. Such observation is a reflection of the wider connection between economic performance and the capacity of individuals to gain access to formal financial systems. In comparison, the coefficient of the bank stability ( $-0.28$ ) is negative and statistically significant ( $t = -2.80$ ) which means that there is negative correlation between greater levels of banking system stability and inclusion. This can be indicative of tensions in the sense that even strong traditional banking frameworks are hindering the adoption of innovative, CBDC-based financial solutions at a faster rate.

**Table 4: Regression Results (Dependent Variable = Financial Inclusion)**

Variable	Coefficient	Std. Error	t-Statistic
Constant	55.20	2.10	26.29
CBDC (Dummy)	3.85	1.25	3.08
GDP Growth	0.45	0.22	2.05
Bank Stability	-0.28	0.10	-2.80

**Note:** \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$

## Discussions

The current paper provides a subtle but explanatory perspective on how central bank digital currencies (CBDCs) impact financial, banking, and macroeconomic performance in the framework of emerging markets. The empirical findings are strong enough to prove the suggestion that CBDCs could contribute to the achievement of financial inclusion, but with substantial conditions. The regression analysis reveals that the adoption of CBDC increases financial inclusion by about four percentage points, and correlation analysis reveals the moderate positive relationship. This observation is consistent with the results of Auer, Cornelli and Frost (2023) and Andini and Jansen (2021) who argued that CBDCs increase access by lowering the cost of transactions and providing safe options to the unbanked. Descriptive statistics also indicate that, although there are moderated average inclusion, CBDC adopters outperform non-adopters, thus advancing the argument that the advent of digital currencies could serve as a driver of increased inclusion in the presence of a supportive digital infrastructure. However, the case of the Nigerian eNaira portrays that a lack of trust and poor connectivity may reduce this impact, which implies that CBDCs may enhance instead of replace more comprehensive financial reforms. The results also verify that CBDCs can be dangerous to banking stability. The existence of the negative coefficient between the use of CBDCs and the stability of banks ( $-0.23$ ) and the statistically significant negative coefficient of the regression on stability demonstrate that CBDCs can result in deposit displacement and increased funding pressure on banks. This practical finding echoes the views expressed by Bindseil and Panetta (2020) who cautioned that CBDCs may disrupt the normal banking structure unless they are well-designed. This can be supported by evidence in Nigeria where banks experienced the loss of deposits after the launch of CBDC (Okoye and Nwokoye, 2022). On the other hand, the careful use of the digital yuan in China, such as transaction and wallet restrictions, shows that the risks can be reduced through design aspects (Zhang and Huang, 2021). Accordingly, the

destabilizing prospect of CBDCs may or may not be imminent depending on regulatory protection and the degree to which they facilitate, instead of marketplace the current banking systems.

The results of macroeconomic are more complex. Regression analysis shows that the explanatory value of GDP growth is low ( $R^2 = 0.09$ ), but this positive coefficient indicates that the nations with better economic performance have more chances to experience inclusion benefits of CBDCs. This fact corroborates the hypothesis assume that CBDCs have the potential to amplify the transmission of monetary policy, but their effects are moderated by design decisions, including the incorporation of interest rate aspects. The positive but insignificant links between the adoption of CBDCs and GDP growth suggest that CBDCs will not be effective in the short run as growth drivers but can create the foundation of long-term efficiency benefits, especially in the form of new payment systems and dropping transactional costs. The effectiveness of design innovations that produce efficiency benefits without destabilizing credit markets is illustrated by case studies of wholesale CBDC trials in Uruguay. Collectively, the evidence shows that CBDCs are both a risk and an opportunity to emerging markets. They have the potential to meaningfully enhance financial inclusion but these benefits can be achieved at the cost of the stability of the banking sector unless prudent design interventions are taken. Their macroeconomic impacts continue to be not very strong in the short-term and would be promising in the long-term as digital ecosystems evolve. That is why the introduction of CBDCs is essential, but their development and implementation should be properly designed, predictive regarding regulations, and consistent with longer-term economic changes.

### **Practical Implications**

The empirical evidence below provides policymakers and financial institutions that act in the emerging economies with a set of actionable insights when it comes to the implementation of central bank digital currencies (CBDCs). To begin with, the fact that CBDCs have a positive impact on financial inclusion means that they can expand access to formal finance. Governments ought to make it their priority to invest in the digital infrastructure and broadband connectivity to make sure that the rural and underserved people enjoy fair benefits. Educational campaigns and programs on awareness are also necessary to encourage trust especially in situations where distrust of digital initiatives is still prevalent. Secondly, the lack of correlation between CBDCs and banking stability highlights how important the careful design of CBDCs is. In order to discourage the deposit flight of commercial banks, central banks ought to take measures like the implementation of transaction limits, the issuance of non-interest-bearing digital currencies, or tiered wallets. By working with commercial banks, it can ensure that CBDCs supplement, not replace, current financial intermediation processes, so credit can be provided to businesses and households.

Third, despite the relative small short-term effects of CBDCs on gross domestic product, they have the potential to increase long-term payments, remittances, and cross-border trade efficiency. The policymakers must consider CBDCs, therefore, to be infrastructural investments, instead of direct sources of economic growth. Last but not least, effective implementation of CBDCs would be based on the formation of robust regulatory rules, robust cybersecurity policies, and a broad range of consumer protection. A gradual process should be used by national authorities, thus starting CBDCs can act as a tool of both innovation and prudence without endangering macro-financial stability.

## **Limitations and Future Research**

Although the current research adds substantive value to the existing knowledge pertaining to the economic implications of central bank digital currencies (CBDCs) in emerging markets, there are a number of methodological limitations that should be acknowledged. To start with, the empirical study is largely based on secondary data and aggregate measures, which might not capture the micro-level forces, including household financial behaviour, digital literacy, or regional heterogeneity in the adoption of CBDC. As a result, external validity of the findings to different strata of the socioeconomic population within the individual countries is restricted. Second, the study utilizes a cross-sectional data that clarifies the associations, but it is incapable of determining causal links. As an example, the relationship between CBDCs and increased financial inclusion may be bidirectional; countries that already have experienced more advanced digitalization can be more inclined to embrace CBDCs, and this can create reverse causality. Additional research based on longitudinal data and panel econometric models may then provide better causal conclusions.

Third, the scope of the analysis is limited to financial inclusion, banking stability, and growth of GDP. Other salient results, including mechanisms of transmission of monetary policy, inflationary processes, remittance efficiency, and consumer trust, are beyond the scope of this work but are central to fully evaluating the macroeconomic effects of CBDCs. In this regard, future studies are recommended to follow mixed-methodological approaches that combine the econometric model with qualitative case analyses and survey-based data to understand the situation-specific impacts better. By broadening the temporal scope of the data, including experimental data on pilot projects, and making comparative studies between developed economies and emerging markets, causal arguments would be further strengthened and the contribution of institutional capacity to the results of CBDC would be clarified. Filling these outlined gaps will allow the future scholarship to provide the policy maker with a more sophisticated, evidence-based advice to follow the opportunities and threats of the CBDC implementation.

## **Conclusion**

This paper analyzed the economic effects of central bank digital currencies (CBDCs) in the emerging economies, the three indicators being financial inclusion, banking stability, and GDP growth. These results establish that CBDCs have a potential to increase financial inclusion, which can be a secure and low-cost substitute that expands access to formal finance. Nevertheless, such advantage is accompanied by the danger to the stability of banks, where CBDCs can stimulate flight of deposits to conventional banks unless properly crafted. Finding suggest a limited short-term impact on GDP growth as well, although CBDCs may form the backbone infrastructure to support long-term efficiency improvements in payment systems and cross-border transactions. These lessons reiterate that CBDCs are not a universal medicine and a policy instrument that can only be successful when carefully designed and contextualized. The emerging markets have to invest in the digital infrastructure, implement the staged rollouts, and create the safeguards that can supplement and not replace commercial banks. Additionally, consumer protection, regulatory frameworks, and cybersecurity are also essential to resilience and trust of the people. Overall, CBDCs are a chance and a challenge: on the one hand, they have the potential to increase the pace of financial inclusion and modernize the economy, but, on the other hand, they can destroy the stability unless properly planned. Innovation mixed with prudence will determine how successful they will be in the emerging markets.

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